Region 4

Quality Assurance Project Plan Guidance for Conducting Brownfields Site Assessments

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Notice

This Region 4 Guidance Document describes key principles and suggested practices for the Brownfields site assessment planning process as documented in a quality assurance project plan. This document is intended as a reference for individuals involved in planning for the Brownfields site assessment process. This guidance manual does not constitute a rulemaking by the United States Environmental Protection Agency (USEPA). The procedures set forth in this document are intended solely as guidance, and they are not intended to create any substantive or procedural rights enforceable by a party in litigation with the United States government or EPA.

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INTRODUCTION

A Quality Assurance Project Plan (QAPP) is a planning document that ensures data collected and analyzed meet project requirements and support environmental decision-making. The QAPP documents all quality assurance, quality control, technical activities and procedures associated with planning, implementing and assessing environmental data collection projects.

A QAPP must be clearly written, complete and accurate. It should reflect the complexity of the project. The content and level of detail in the QAPP will vary according to the nature of work being performed and the intended use of the data.

Many planning tools are available to ensure that a quality QAPP is thoroughly planned, prepared, and executed. One such tool is called the Data Quality Objectives (DQO) process. This important planning tool is used to determine the level of data quality needed for specific data collection activities, and to estimate the cost associated with these activities. The DQO process is based on seven important steps as follows:

Summary of the DQO process

1. State the Problem
2. Identify the Decisions
3. Identify Inputs in the Decisions
4. Define the Boundaries of the Study or Project
5. Develop a Decision Rule
6. Specify Limits on Decision Errors
7. Optimize the Design

These seven DQO steps can be used during the setup and initial planning stages of the Brownfields site assessment process to help ensure that field activities, data collection operations, and the resulting data meet the project objectives. This DQO process is continual and updates are made as the project expands, and more information is gathered about the site. The DQO process was incorporated into the Region 4 Brownfield site assessment QAPP template outlined in Appendix A.

The following framework should be used to generate a Brownfields site assessment QAPP. The tables and figures contained in this document should be used as a template to compile and complete the Brownfields site assessment QAPP. Tables do not have to be produced in the exact format shown in this guidance document, but should contain the same information requested in these tables. Standard Operating Procedures (SOPs) and standard analytical methods should be referenced in the text. SOPs must be referenced in the QAPP by title, date, revision number and the originator's name.

The QAPP developed for Brownfields site assessments should combine planning for the entire project - management, sampling, analyses, data review, data assessment/validation, and reporting- all under one cover. The QAPP should be shared with all individuals or team members working on a Brownfields project, including the contractors who perform the sampling and analytical work.

This guidance document provides the minimum information which should be included in a Brownfields site assessment QAPP. A more detailed discussion of the QAPP process for Brownfields site assessment may be found in EPA's document titled "***Quality Assurance Guidance for Conducting Brownfields Site Assessments***," *(EPA 540-R-98-038, OSWER 9230.0-83P, PB98-963307, September 1998)*. This document and additional information specific to the Brownfields program can be found on the EPA Brownfields homepage at http://www.epa.gov/swerosps/bf/liab.htm. The user of this Region 4 Brownfields QAPP guidance is also urged to refer to the Requirements for Quality Assurance Project Plans, EPA QA/R-5 and Guidance for Quality Assurance Project Plans, EPA QA/G-5 documents for additional details on preparation of QAPPs. These documents may be obtained thru the Internet at http://es.epa.gov/ncerqa/qa/qa_docs.html#R-5 , which is the EPA Quality Assurance Division's home page address.

Instructions for Completing a Region 4
Brownfields Site Assessment QAPP

PROJECT MANAGEMENT - These elements ensure that the project has a defined goal and that participants understand the goal and approach to be used.

1. Title and Approval Page

Complete template provided in Appendix A: Section 1.

2. Project Organization and Responsibility

Complete template provided in Appendix A: Section 2 or insert another project-specific chart. Develop an organizational chart which identifies the chain of command of key personnel. Include titles and/or responsibilities and organizational affiliation of all project participants.

3. Problem Definition

Complete Section 3 of Appendix A.. Briefly state the specific problem that the data collection project is designed to solve or the decisions to be made (i.e., the project objectives). Include any background information, such as reference to previous studies, that indicate why the project is needed.

4. Project Description

Complete Section 4 of Appendix A. Provide a detailed description of the work to be performed and a schedule for implementation (*see Table 4.1*). Prepare an overall project timetable that outlines estimated beginning and ending dates for the entire project as well as specific activities and products within the Brownfields project.

MEASUREMENT and DATA ACQUISITION - These elements ensure that appropriate methods for sampling, analysis and data handling, proper Quality Control (QC) procedures, and performance criteria are employed and documented in the Brownfields site assessment QAPP.

5. Sampling Design

Complete Section 5 of Appendix A. Discuss project sampling design and provide rationale for choice of sampling locations for each parameter/matrix to be sampled during this Brownfields project. Identify sampling locations per matrix on a detailed site map and attach site map to the Brownfields site assessment QAPP. Describe rationale for use of field screening techniques and identify comparability acceptance criteria and percentages for fixed laboratory confirmation by parameter/matrix.

6. Sampling Requirements

Complete templates provided in Section 6 of Appendix A. Procedures for sample collection, sample preservation, sample handling , sample custody, field equipment operation, decontamination, and preventive maintenance should follow USEPA's Region 4 Science and Ecosystem Support Division (SESD) Enforcement and Investigations Branch (EIB) ***Standard Operating Procedure and Quality Assurance Manual*** (SOPQAM), May 1996. This Region 4 SOPQAM is available from USEPA - Region 4, SESD/EIB, 980 College Station Road, Athens, Georgia, 30605-2720; or from the Internet at http://www.epa.gov/region4/sesd/sesdpub.html . If sampling procedures deviate from the Region 4 SOPQAM, explain the differences or attach a separate sampling SOP.

7. Quality Control Requirements

Complete Section 7 of Appendix A. Provide the name(s) of the analyte(s) which are to be determined for the site, the analytical

method(s) to be used by the laboratory (including any preparation methods used for sample extraction or clean-up), and a reference for all analytical methods used or prescribed, including document title, method name/number, revision number and /or date. Provide the target analytical detection limits and quantitation limits employed by the laboratory for water and soil matrices. List the analytical accuracy in terms of percent recovery, and the analytical precision in terms of percent difference. Attach analytical SOPs for sample preparation and analysis for each parameter/matrix, if these analytical SOPs are different from the methods referenced in Section 7.

8. Data Management and Documentation

Complete Section 8 for Appendix A. Briefly discuss data documentation and management from field collection and lab analysis to data storage and use. Analytical data packages used in the data validation process must include all relevant documents. Describe procedures for detecting and correcting errors during data reporting and data entry. Provide examples of any forms or checklists.

ASSESSMENT/OVERSIGHT - These elements ensure proper implementation of the QAPP.

9. Assessments and Response Actions

Complete Section 9 of Appendix A. Describe procedures for identifying and correcting any problems encountered during the Brownfields site assessment project operations.

10. Project Reports

Complete Section 10 of Appendix A. Identify the frequency, content and distribution of project reports that detail project status, results of internal assessments, corrective actions implemented and project results.

DATA VALIDATION AND USABILITY - This element encompasses activities used to ensure that the collected data are scientifically defensible and meet project objectives.

11. Data Validation

Complete Section 11 of Appendix A. Describe the process to be used for reviewing the environmental data and for making decisions regarding accepting, rejecting or qualifying the data. Data validation may have many tiers or options depending on the "level of confidence" the decision-maker wishes to have in the analytical data.

Note: The options presented below are simply examples of data validation procedures which might be used. The options are not intended to be all inclusive; there may be other data validation procedures which are more suitable for the specific site under consideration. Data validation options should always be oriented towards the final use of the data and the confidence the data user desires in the overall data quality.

The following options are examples of various levels of data validation that can be used for reviewing environmental data for Brownfields site assessments:

Option 1 - Review of all sample results and supporting documentation (i.e. "raw data") to verify final reported values and proper QA/QC procedures. Written data validation guidelines are followed if such guidelines exist.

Option 2 - Review of a percentage of sample results (e.g. 10%, 20 %, etc,) and supporting documentation (i.e. "raw data") to verify final reported values and proper QA/QC procedures for that portion of data. Assumptions are made on the quality of the entire data set based on the portion reviewed. Written data validation guidelines are followed if such guidelines exist.

Option 3- Review of quality control indicators associated with data to determine whether the indicators meet pre-established and documented data quality objectives. Final reported results are not verified against supporting

documentation. See Section 8 of this document for examples of data quality control indicators to request.

Option 4- Review of sample results only for any obvious discrepancies or anomalies based on previous data or historical knowledge of the site.

12. Data Usability

Complete Section 12 in Appendix A. Describe the process for determining whether the data collection and analysis activities successfully characterized the site in terms of precision, accuracy, representativeness and completeness to meet project objectives. Discuss the assessment of sample representativeness and measurement precision and accuracy, and data comparability. Completeness should be described in terms of the total number of samples successfully analyzed as compared to the total number of samples analyzed.

APPENDIX A

Template for Completing a Region 4 Brownfields Site Assessment Quality Assurance Project Plan (QAPP)

Section 1. Title and Approval Page

_____

Document Title

_____

Prepared by: (Preparer's Name and Organizational Affiliation)

_____

Address and Telephone Number

_____

Day/Month/Year

Project Manager: _____

Signature

_____

Printed Name/Date

Project QA Officer: _____

Signature

_____

Printed Name/Date

U.S. EPA Project Manager Approval: _____

Signature

_____

Printed Name/Date

U.S. EPA QA Manager Approval: _____

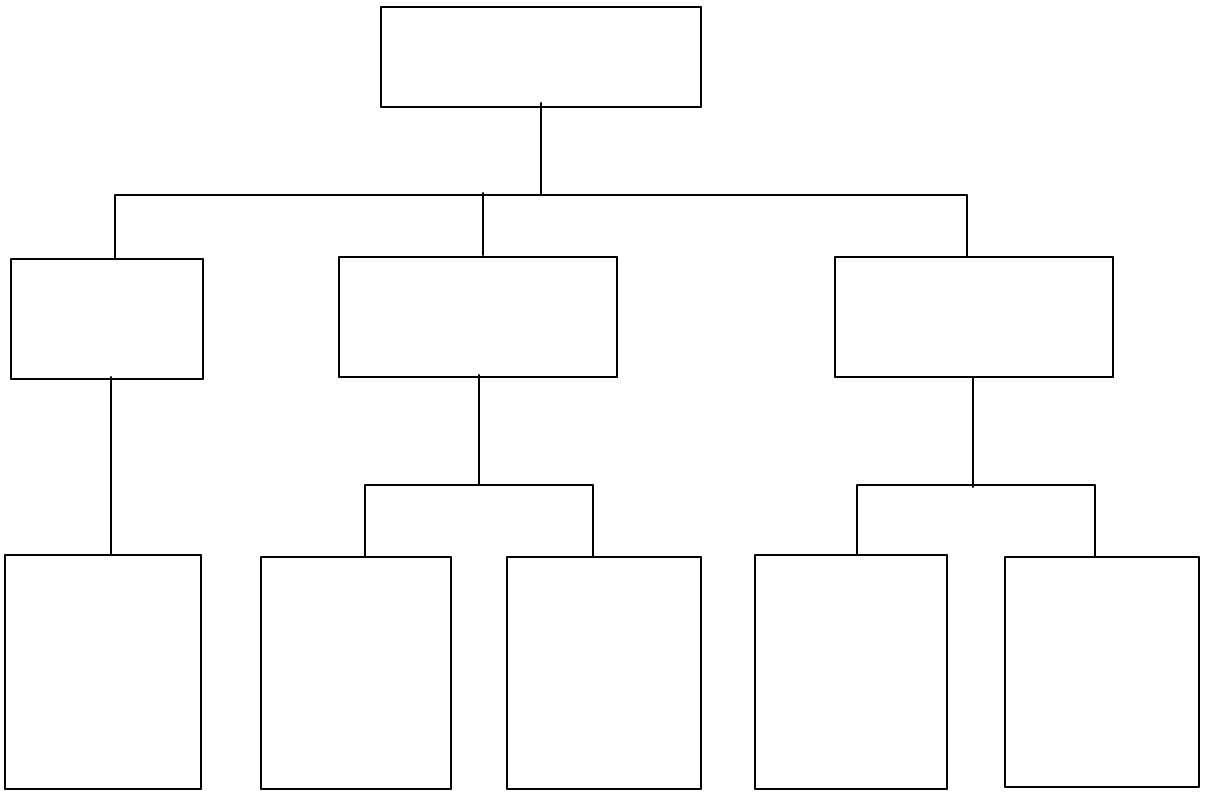
Signature

_____

Printed Name/Date

Section 2. Project Organization and Responsibility

(Fill-in the blanks, if applicable, otherwise insert another project-specific chart.)



Section 3. Problem Definition (use multiple pages if needed)

Site Name:
Site Location:

Title:
Revision Number:
Revision Date:
Page: ____ of ____

Section 4. Project Description (use multiple pages if necessary):

Site Name:
Site Location:

Title:
Revision Number:
Revision Date:
Page: ____ of ____

Site Name:
Site Location:

Section 4.1 Project Timeline

Activities (list products)	Project Start Dates (MM/DD/YY) Project End

Site Name:
Site Location:

Section 5. Sampling Design (use multiple pages if needed)

Site Name:
Site Location:

Section 6. Sampling Requirements (use multiple pages if needed)

Parameter	Matrix	Number of Samples (include field QC)	Sampling SOP	Containers (Number, size and type)	Preservation Requirements (temperature, light, chemical)	Maximum Holding Time (preparation/ analysis)

Section 7. Analytical Precision and Accuracy (use multiple pages if needed)

Analyte	Analytical Method	Detection Limit (water/soil) (units)	Quantitation Limit (water/soil) (units)	Precision (water/soil)	Accuracy (water/soil)

Section 8. Data Management and Documentation (use multiple pages if needed)

Types of information to request from the laboratory:

a) Data Results Sheets (include PE sample results)
b) Method Blank Results
c) Surrogate Recoveries and Acceptance Limits
d) Matrix Spike/Matrix Spike Duplicate Results and Acceptance Limits
e) Spike/Duplicate Results and Acceptance Limits
f) Laboratory Control Sample Results and Acceptance Limits
g) ICP Serial Dilution Results

h) ICP Interference Check Sample Results
I) Project Narrative which contains all observations and deviations

Section 9. Assessment and Response Actions (use multiple pages if needed)

Section 10. Project Reports (use multiple pages if needed)

Site Name:
Site Location:

Title:
Revision Number:
Revision Date:
Page: ___ of ___

Section 11. Data Validation (use multiple pages if needed)

a. Data Review Process

b. **Data Validation References**:

1. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, USEPA, February, 1994, EPA-540/ R-94/012.
2. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, USEPA, February, 1994, EPA/540/R-94/013.

Have the data validation procedures been modified? (circle one) Yes No
If yes, document modifications in the table below.

Section 12. Data Usability (use multiple pages if needed)

Site Name:
Site Location:

Title:
Revision Number:
Revision Date:
Page: ___ of ___